

REMARKS

In the Office Action claims 1-4, 6-10, 12-21, 23-25 and 27-31 have been rejected under 35 U.S.C. §103 for being unpatentable over Pawlowski et al. (2004/0002694 A1 [hereinafter Pawlowski]) in view of Zeylikovich et al. (USP 5,943,133 [hereinafter Zeylikovich]). Also, claims 5, 11, 22, 26 and 32 have been rejected for being unpatentable over Pawlowski in view of Zeylikovich, and further in view of Dubnack (USP 6,347,244 [hereinafter Dubnack]). No claims have been cancelled and no claims have been added. Accordingly, claims 1-32 remain pending.

By definition, a harmonic is “a sinusoidal component of repetitive complex waveform having a frequency which is an exact multiple of a basic repetition frequency (the fundamental)....the label of the harmonic is always its frequency divided by the fundamental.” (See Cambridge Dictionary of Science and Technology).

In the context of the present invention, a Second Harmonic Generation (SHG) response, as claimed, is exemplified by light of a wavelength (i.e. 440nm) having a frequency that is an exact multiple (i.e. twice the frequency) of the fundamental wavelength that is used to excite the response (i.e. 880nm). Stated differently, for the photon conversion phenomenon relied on by the present invention, red light (880nm) is used to generate a blue light (440nm) response. (See page 5, lines 12 – 22, and page 9, lines 19-29 of the present application).

As claimed for the present invention, certain technical aspects of “photon conversion” are of particular importance. In detail, the “photon conversion” and “SHG response” set forth in the independent claims 1, 12 and 23, require red light enter the

eye, and blue light exit the eye. More specifically, photon conversion occurs when two photons of red light (880nm) are incident on anisotropic tissue in the fundus. Importantly, this photon pair must be incident on the same tissue cell, within the same short time interval (e.g. approximately one femtosecond [ $10^{-15}$ ]). Statistically, this process requires millions of photons (red light: 880nm) be emitted before a photon pair can be expected to produce a single response photon (blue light: 440nm). The response, however, is immediate.

In comparison with photon conversion, the fluorescence phenomenon is quite different. In fluorescence, a relatively short wavelength blue light is used to excite the target tissue. The target tissue then responds with an emission of a relatively longer wavelength green light. Importantly, in this process, one blue photon (not millions) is capable of generating the green light. In this case, however, the response is not immediate and will, instead, result after some delay (e.g. approximately one nanosecond [ $10^{-9}$ ]).

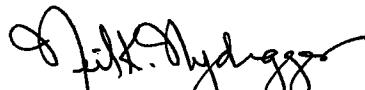
With the above in mind, several facts become apparent. For one, fluorescence techniques do not compare with photon conversion techniques. They are different. For another, using blue light to cause "photon conversion" results in a converted light response (wavelength 220nm) that is essentially absorbed in the lens and cornea and therefore not detectable. For yet another, the response from fluorescence is delayed approximately one million times longer than the response received from photon conversion. This difference in response time requires other technical issues be considered.

None of the cited references teach or suggest a structure or a cooperation of structure as claimed for the present invention. Specifically, neither Pawlowski nor Zeylikovich nor Dubnack employ the "photon conversion" phenomenon. And, their respective structures are consequently employed in different ways. Indeed, the only reference to "second harmonics" is in Zeylikovich (col. 14 Ins. 24-29) where it is clear that the second harmonics are used as a *source* (emphasis added), rather than as a response. This difference is profound. And, no combination of cited references overcome this difference.

In conclusion, Applicant respectfully asserts that claims 1-32 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 619-688-1300 for any reason that would advance the instant application to issue.

Dated this 17<sup>th</sup> day of April, 2008.

Respectfully submitted,



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